

I. **Amendments to the Claims**

This listing of claims shall replace all prior versions, and listings, of claims in the application.

**Listing of Claims**

**Claim 1 (Currently Amended):** A method for presenting data and functions to a user via a presentation layer, for use in a distributed processing system to effect an interface between a business layer and the presentation layer, the method comprising the steps of:

providing a data set structure which implements an abstract interface for use in both the business layer and the presentation layer, said data set structure comprising hierarchical organizational information for arranging data and functions into at least one tree structure, the tree structure being configured to store data and functions of arbitrary type, wherein the data and functions of arbitrary type are arbitrarily nested in the tree structure;

creating and populating a business layer data set in said business layer ~~according to~~ using said data set structure as required by the business layer, said business layer data set comprising data and functions available for use in said business layer;

instantiating the business layer data set in said business layer as beans;  
serializing the beans into XML;

transporting the serialized beans to the presentation layer using the Simple Object Access Protocol (SOAP);

deserializing the serialized beans in the presentation layer; and

populating a presentation layer data set in said presentation layer ~~according to said data set structure from~~ with said ~~business layer data set encoded as~~ deserialized beans as required by the presentation layer, said presentation layer data set comprising data and functions available for use by the user in said presentation layer.

**Claim 2 (Previously Presented):** A method in accordance with claim 1 wherein providing a data set structure comprises providing a plurality of items, an item being an abstract element of arbitrary type, comprising a plurality of data items and a plurality of function items.

**Claim 3 (Withdrawn):** A method in accordance with claim 2 wherein providing a plurality of data items comprises providing a data value for each of said plurality of data items.

**Claim 4 (Previously Presented):** A method in accordance with claim 2 wherein providing a plurality of data items comprises providing a domain for each of said plurality of data items, the domain corresponding to the data type of a data item.

**Claim 5 (Previously Presented):** A method in accordance with claim 4 wherein providing a domain for each of said data items comprises providing a domain home for each of said plurality of data items, the domain home being a means of locating a domain.

**Claim 6 (Previously Presented):** A method in accordance with claim 4 wherein providing a domain for each of said data items comprises providing a context for each of said plurality of data items, the context providing means for distinguishing between otherwise identical domains.

**Claim 7 (Previously Presented):** A method in accordance with claim 4 wherein providing a domain for each of said data items comprises providing a range domain for each of said plurality of data items, the range domain corresponding to those domains that have a continuous range of values, bound by an upper and lower limit.

**Claim 8 (Previously Presented):** A method in accordance with claim 4 wherein providing a domain for each of said plurality of data items comprises providing a discrete domain for each of said plurality of data items, the discrete domain corresponding to those domains that have an explicit list of permitted values.

**Claim 9 (Withdrawn):** A method in accordance with claim 2 wherein providing a plurality of function items comprises providing a function for each of said plurality of function items.

**Claim 10 (Withdrawn):** A method in accordance with claim 2 wherein providing a plurality of function items comprises providing a function set for each of said plurality of function items.

**Claim 11 (Currently Amended):** An apparatus for use in a distributed data processing system comprising:

at least one hardware server for:

providing a data set which implements an abstract interface for storing available data and identification of function calls, said data and function calls being arranged in at least one tree structure, the tree structure being configured to store data and functions of arbitrary type, wherein the data and functions of arbitrary type are arbitrarily nested in the tree structure;

creating and populating a business layer using said data set configured to store data and identification of function calls that are available for use as required by said presentation layer ~~in accordance with said data set~~;

instantiating the business layer data set in said business layer as beans;

serializing the beans into XML;

transporting the serialized beans to the presentation layer using the Simple Object Access Protocol (SOAP);

deserializing the serialized beans in the presentation layer; and

populating a presentation layer using said deserialized beans configured to store data and identification of function calls that are available for use by a user ~~in accordance with said data set encoded as beans~~ as required by the presentation layer.

populating a presentation layer data set in said presentation layer ~~according to said data set structure from~~ with said ~~business layer data set encoded as~~ deserialized beans as required by the presentation layer

**Claim 12 (Original):** An apparatus in accordance with claim 11 wherein said presentation layer is further configured to request data and identification of function calls from said business layer and to store said data and identification of function calls in accordance with said data set so that data and identification of function calls of said business layer can be available to said presentation layer.

**Claim 13 (Previously Presented):** An apparatus in accordance with claim 12 wherein said at least one server is configured to store data and identification of function calls that are available for use by said presentation layer in accordance with said data set wherein said at least one hardware server provides unique data and identification of function calls to said presentation layer.

**Claim 14 (Original):** An apparatus in accordance with claim 13 wherein business layer function calls are available to said presentation layer for execution at said presentation layer via said data set.

**Claim 15 (Original):** An apparatus in accordance with claim 13 wherein business layer function calls are available to said presentation layer for execution at said business layer via said data set.

**Claim 16 (Original):** An apparatus in accordance with claim 13 wherein business layer function calls are available at said presentation layer for execution at both said presentation layer and at said business layer via said data set.

**Claim 17 (Previously Presented):** A method for presenting data and functions to a user via a presentation layer, for use in a distributed processing system to effect an interface between a business layer and the presentation layer, the method comprising the steps of:

providing a data set structure which implements an abstract interface for use in both the business layer and the presentation layer, said data set structure comprising hierarchical organizational information for arranging data and functions into at least one tree structure, the tree structures being configured to store ~~one of~~ data and functions of arbitrary type, wherein the data and functions of arbitrary type are arbitrarily nested in the tree structure, and which provides a plurality of data items and a plurality of function items, wherein each of said plurality of data items provides a data value, a range domain, and a context, the range domain having a domain home, and wherein each of said plurality of function items provides at least one function;

populating a business layer data set in said business layer according to said data set structure, said business layer data set comprising data and functions available for use in said business layer; and

instantiating the business layer data set in said business layer as beans;

serializing the beans into XML;

transporting the serialized beans to the presentation layer using the Simple Object Access Protocol (SOAP);

deserializing the serialized beans in the presentation layer; and

populating a presentation layer data set in said presentation layer according to said data set structure encoded as beans from said business layer data set, said presentation layer data set comprising data and functions available for use by the user in said presentation layer.